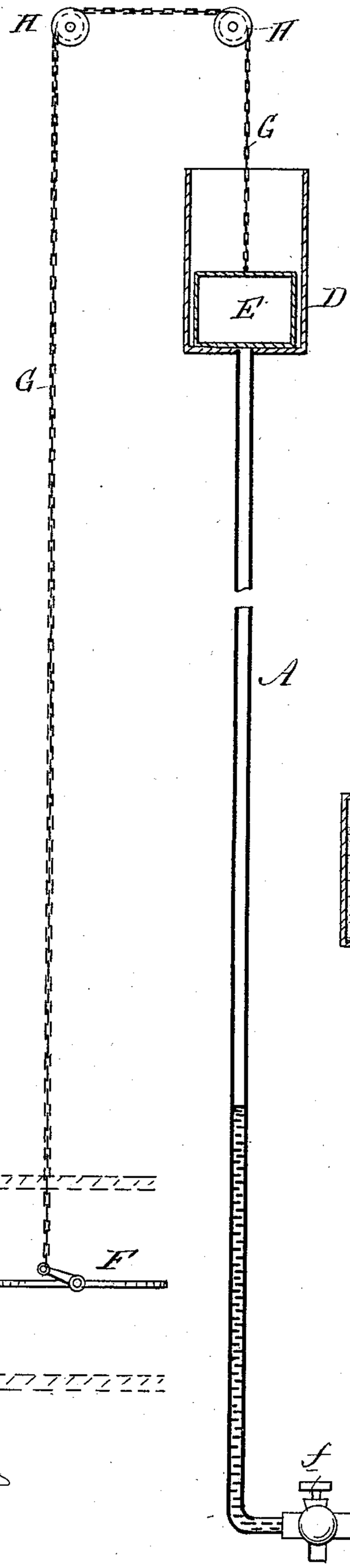
(No Model.)

H. BISSON.

DRAFT REGULATOR.

No. 254,595. Patented Mar. 7, 1882.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HIPPOLYTE BISSON, OF HENDERSON, MINNESOTA.

DRAFT-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 254,595, dated March 7, 1882.

Application filed June 2, 1881. (No model.)

To all whom it may concern:

Be it known that I, HIPPOLYTE BISSON, of Henderson, in the county of Sibley and State of Minnesota, have invented a new and Improved Draft-Regulator, of which the following is a full, clear, and exact description.

The object of this invention is to provide a simple and more sensitive device for automatically regulating the dampers in steam-boiler furnaces.

Damper-regulators have been used that consist of a column of water or mercury supported in a tube of equal diameter throughout, and supporting a float by the pressure of steam in the boiler, the float in the tube being connected to the damper by a chain passing over suitably-arranged pulleys; but in these cases the tube containing the mercury is necessarily of considerable diameter, in order to accommodate a float of sufficient size and weight to move in accord with the changes in the steam-pressure and to quickly transmit the motion of the mercury column to the damper. Hence a comparatively large amount of mercury is required for filling the tube.

This invention consists in the application to a pipe or tube of small dimensions of a large chamber or reservoir for containing the float and of a like chamber or reservoir for holding the mercury, while in some instances a third reservoir may be attached to the pipe or tube for containing the condensed steam, a suitable cock being provided for emptying the said pipe or tube and connected reservoirs of their liquid contents.

The drawing represents a side elevation of the device, partly in section, in position for operating.

In the drawing, *a* represents the horizontal portion of the pipe or tube A, leading from the boiler. (Not shown.) At the point *b* the said pipe A is bent downward at right angles into a reservoir or chamber, B, that is designed to hold the steam condensing in pipe A, whereby direct contact of the steam with the mercury and the consequent heating and expansion of the latter in the said pipe A is avoided. From the reservoir B the pipe A is continued perpendicularly, as shown at *b'*, to a reservoir, C, designed to contain mercury. Thence said pipe A is continued perpendicularly for a short distance, as shown at *c*, then turned horizontally, as shown at *d*, in which horizontal portion *d* is a cock, *f*, for emptying said pipe A and reservoirs B C D of their fluid contents, and is then bent upward at right angles, forming the vertical portion *g*, which terminates in the reservoir D, which is open at the top and contains the float E, that is connected to the damper F by a chain, G, which passes over suitable pulleys, H H, in the usual manner with draft-regulators. The length of the pipe-section *g* will be determined by the amount of steam-pressure designed to be carried in the boiler.

When the steam-pressure in the boiler is up the steam passing through the pipe A into the reservoir C forces the contained mercury up into the reservoir D, thereby correspondingly raising the float E and permitting the damper F to correspondingly close by its own gravity; and as the steam-pressure decreases because of the shutting off the draft by the closing of the damper F, the mercury flows back from the reservoir D, thereby permitting the float E to resume its normal position and by its weight to open the damper F to again increase the draft, the operation of the device in the matter of regulating the draft being the same as in other draft-regulators.

It will be seen that because of the small pipe A and reservoirs C D a comparatively small quantity of mercury is required to produce the same effect that is ordinarily produced in draft-regulators having pipes of much greater dimensions, and it will be seen that with a much smaller quantity of mercury a greater area of pressure can be applied to the float than in mercury-regulators of the ordinary construction. Hence this improved regulator is manifestly more sensitive to the changing pressures of steam than are those in common use.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In a draft-regulator, the combination, with the reservoir D and float E, of the siphon-pipe A, connecting with the boiler by extension *a*, the mercury-reservoir C, and the condenser B, whereby a body of water is interposed between the steam and mercury, as described.

HIPPOLYTE BISSON.

Witnesses:

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